Final Comprehensive Risk Assessment
Sampling and Analysis Plan
Addendum 05-01
Phase 2 – Targeted Sampling

Approval received from the U.S. Environmental Protection Agency

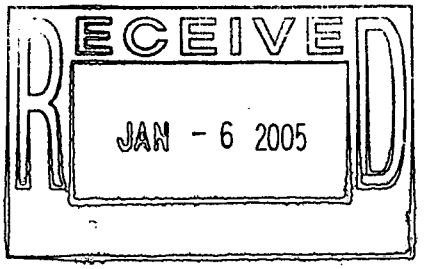
December 2, 2004

Approval received from the Colorado Department of Public Health and Environment

December 2, 2004

SW-5022

December 2004



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ACRONYMS

BZ	Buffer Zone
CRA	Comprehensive Risk Assessment
DOE	U.S. Department of Energy
ER	Environmental Restoration
IA	Industrial Area
IABZSAP	Industrial Area and Buffer Zone Sampling and Analysis Plan
K-H	Kaiser-Hill Company, L.L.C.
PMJM	Preble's meadow jumping mouse
RFETS	Rocky Flats Environmental Technology Site
SAP	Sampling and Analysis Plan
SVOC	semivolatile organic compound
USFWS	U.S. Fish and Wildlife Service

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1.0 INTRODUCTION

Following accelerated actions at the Rocky Flats Environmental Technology Site (RFETS), the U.S. Department of Energy (DOE) will perform a Draft Comprehensive Risk Assessment (CRA) to assess human health and ecological risks posed by remaining metals, chemicals, and radionuclides. To support completion of the CRA, the Risk Assessment Work Group (DOE, Colorado Department of Public Health and Environment, U.S. Environmental Protection Agency, DOE, U.S Fish and Wildlife Service (USFWS), Kaiser-Hill Company, L.L.C. [K-H] and stakeholders) conducted a data adequacy review to identify areas of RFETS that may need additional sampling. As a result of the first phase of the review, DOE performed additional surface soil sampling to ensure that radionuclides and metals data were adequate to evaluate risk throughout the Site, especially in areas that have not been intensively sampled in relation to potential accelerated actions (DOE 2004a). Phase 2 of the review addressed sediments and surface water in streams and ponds as well as surface soil areas that might require additional targeted sampling. This sampling addendum represents proposed sampling for Phase 2.

2.0 SAMPLING

Sediment and surface water samples will be collected in stream channels and ponds at the planned locations shown on Figures 1 and 2 respectively. Sampling specifications are listed in Table 1. Sediment samples will be analyzed for radionuclides by alpha spectroscopy, metals by EPA method 6010, semivolatile organic compounds (SVOCs) by EPA method 8270, and PCBs by EPA method 8082. Dioxins will be analyzed by EPA method 8290. Surface water will be analyzed for radionuclides by alpha spectroscopy and metals by EPA method 600.

For stream channel samples, the sampling crew will identify the stream channel location of the estimated deepest sediment deposition between each of the planned locations shown on Figure 1. The first sampling interval will consist of all sediment that exists within the top 6 inches. Actual ending depth will be recorded. If the sediment is deeper than 6 inches, additional samples required to reach the bottom of the sediment layer will be taken in 2-foot intervals. Actual ending depth will be recorded. Surface water will be sampled at the actual locations of the sediment sampling locations if water is present. If water is not present, the nearest location to the actual sediment location will be sampled.

In the ponds, the sampling crew will use a small aluminum boat, or other means to be determined, from which they will obtain sediment samples using a hand-operated coring tool. The sampling crew will target the center or the area of greatest sediment deposition and the entire sediment layer will be cored. The core will be analyzed in the top 6 inches and in 2-foot intervals after that. Sampling locations will be surveyed, marked, and recorded in accordance with the Industrial Area (IA) and Buffer Zone (BZ) Sampling and Analysis Plan (IABZSAP) (DOE 2004b).

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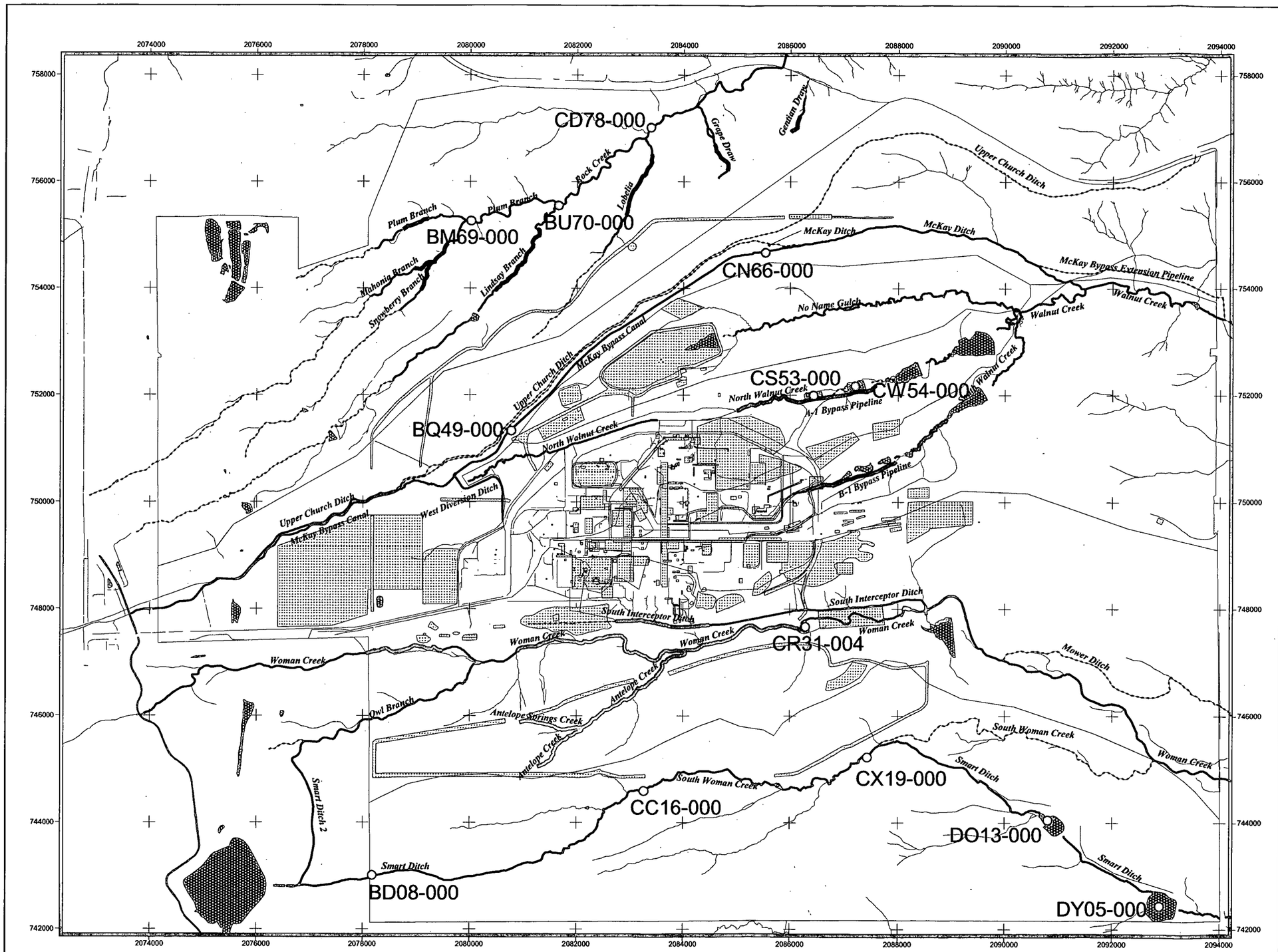
Figure 1
Sediment Targeted Sampling Locations for the CRA



KEY

- Sediment Targeted Sampling Location
- Stream, Ditch, Culvert, Spillway
  - Perennial
  - Intermittent
  - Ephemeral
- SW/SED Exposure Unit
- Pond
- Dirt road
- Paved Road
  - Asphalt
  - Source - IHSS or PAC

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1000 0 1000 Feet

Scale = 1:22000

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: RADMS

Date:11.09.2004

Prepared for: KAISER-HILL COMPANY

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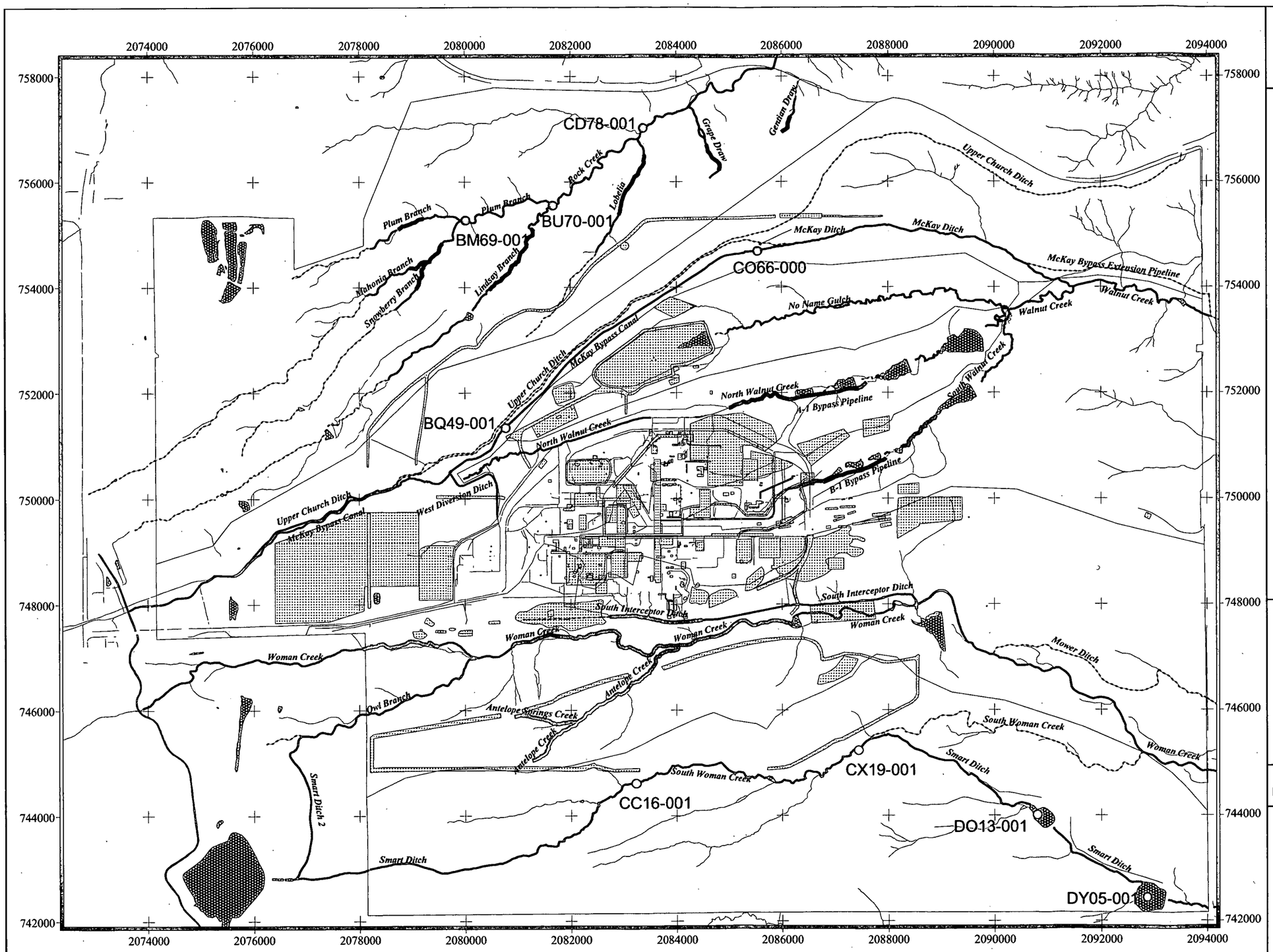
Figure 2
Surface Water Targeted Sampling Locations for the CRA



KEY

- Surface WaterTargeted Sampling Location
- Stream, Ditch, Culvert, Spillway
  - Perennial
  - Intermittent
  - Ephemeral
- SW/SED Exposure Unit
- Pond
- Dirt road
- Paved Road
  - Asphalt
  - Source - IHSS or PAC

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State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

U.S. Department of Energy
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Prepared by: R.A.D.M.S. Date:11.09.2004

Prepared for: KAISER•HILL COMPANY

File: w:\projects\fy2004\cra\sap\cra_targeted_sampling.apr

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3.0 REFERENCES

DOE, 2004a, Final Comprehensive Work Plan and Methodology, September

DOE, 2004b, Industrial Area and Buffer Zone Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, May.

Table 1
Sediment and Surface Water Sampling Specifications

Location/Media	Location Code	Easting	Northing	Depth Interval (feet)	Analyte	Analytical Method
Sediment						
Plum Branch, Rock Creek	BM69-000	2080011.853	755257.272	0.0 - to the depth of sediment	Radionuclides Metals SVOCs	Alpha Spec 6010 8270
Plum Branch, Rock Creek	BU70-000	2081649.746	755546.312	0.0 - to the depth of sediment	Radionuclides Metals SVOCs	Alpha Spec 6010 8270
Rock Creek	CD78-000	2083371.942	757003.555	0.0 - to the depth of sediment	Radionuclides Metals SVOCs	Alpha Spec 6010 8270
McKay Bypass Canal	BQ49-000	2080770.583	751331.147	0.0 - to the depth of sediment	Radionuclides Metals	Alpha Spec 6010
McKay Bypass Canal	CN66-000	2085527.698	754667.149	0.0 - to the depth of sediment	Radionuclides Metals	Alpha Spec 6010
Smart Ditch	BD08-000	2078176.333	743002.218	0.0 - to the depth of sediment	Radionuclides Metals	Alpha Spec 6010
South Woman Creek	CC16-000	2083255.867	744585.951	0.0 - to the depth of sediment	Radionuclides Metals	Alpha Spec 6010
South Woman Creek	CX19-000	2087427.651	745223.307	0.0 - to the depth of sediment	Radionuclides Metals	Alpha Spec 6010
Pond D-1	DO13-000	2090807.569	744045.164	0.0 - to the depth of sediment	Radionuclides Metals	Alpha Spec 6010

Location/Media	Location Code	Easting	Northing	Depth Interval (feet)	Analyte	Analytical Method
Pond D-2	DY05-000	2092874.147	742442.117	0.0 - to the depth of sediment	Radionuclides Metals	Alpha Spec 6010
Pond A-1	CS53-000	2086424.278	751997.295	0.0 - to the depth of sediment	Radionuclides Metals VOCs SVOCs PCBs Dioxins	Alpha Spec 600 8260 8270 8082 8290
Pond A-2	CW54-000	2087204.346	752165.789	0.0 - to the depth of sediment	Radionuclides Metals VOCs SVOCs PCBs Dioxins	Alpha Spec 600 8260 8270 8082 8290
Pond C-1	CR31-004	2086280.164	747669.14	0.0 - to the depth of sediment	Dioxins	8290
Surface Water						
Plum Branch, Rock Creek	BM69-001	2080014.020	755266.380	NA	Radionuclides Metals	Alpha Spec 600
Plum Branch , Rock Creek	BU70-001	2081667.020	755545.084	NA	Radionuclides Metals	Alpha Spec 600
Rock Creek	CD78-001	2083368.072	757005.874	NA	Radionuclides Metals	Alpha Spec 600
McKay Bypass Canal	CO66-000	2085540.037	754680.142	NA	Radionuclides Metals	Alpha Spec 600
McKay Bypass Canal	BQ49-001	2080773.246	751335.700	NA	Radionuclides Metals	Alpha Spec 600

Location/Media	Location Code	Easting	Northing	Depth Interval (feet)	Analyte	Analytical Method
South Woman Creek	CC16-001	2083225.750	744605.982	NA	Radionuclides Metals	Alpha Spec 600
South Woman Creek	CX19-001	2087432.588	745229.218	NA	Radionuclides Metals	Alpha Spec 600
Pond D-1	DO13-001	2090798.057	743998.328	NA	Radionuclides Metals	Alpha Spec 600
Pond D-2	DY05-001	2092854.734	742440.240	NA	Radionuclides Metals	Alpha Spec 600